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10/780,813	02/17/2004	Joseph Florian	263.1	1498

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EXAMINER	
HUNTLEY, DANIEL CARROLL	
ART UNIT	PAPER NUMBER
3737	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/780,813	FLORIAN, JOSEPH	
	Examiner	Art Unit	
	DANIEL HUNTLEY	3737	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 March 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claims 2, 5-6, and 10 are objected to because of the following informalities: In claim 2, replace "characterized as" with "comprised of". In claim 5, insert "wherein" prior to "… each of said…" and replace "being" with "is". In claim 6, insert "wherein" prior to "… said waveguide …". Claim 10 recites an intended use but fails to add a further structural limitation. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-10 and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "said thin-disk" in line 12 of page 1. There is insufficient antecedent basis for this limitation in the claim apart from the preamble.

In claim 3, the phrase "formed of", specifically "of", renders the scope of the claim unclear as to whether the phrase is meant to be inclusive or exclusive.

In claim 5, the term "about between" in claim 5 is a relative term which renders the claim indefinite. The term "about between" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The term "about between" is followed by "0.5 and 5 cm^2".

Claim 9 recites the limitation "the tissue test site" in line 3 of page 4. There is insufficient antecedent basis for this limitation in the claim.

In claims 1 and 14, the phrases "…at least one surface prepared such..." are unclear as to whether this is a process of making or specific materials used.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 11-13 and 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 4,091,803 (Pinder('803)) in view of US Publication 2004/0008405 A1 (Pelouch('405)).

In re claim 11, Pinder('803) teaches an optical in-vivo monitoring systems for monitoring states of living tissues comprising: an illumination source (col 1, lns 50-52); an optical coupling element (col 2, lns 22-43, 52-65); and a photodetector (col 1, lns 53-56), said illumination source arranged to transmit a beam into a tissue test site, said optical coupling element concentric therewith said illumination source, being arranged to receive modulated light from the tissue test site (col 1, lns 62-66) and transmit received light. Pinder('803) does not expressly teach transmission at a sufficiently higher energy density to said photodetector. However, Pelouch('405) teaches a waveguide amplifier for

use in wave guidance and beam transport in fields such as telemetry and detection systems for boosting the signal density ([0073]; [0120]-[0121]).

In re claim 12, Pinder('803) teaches the claimed invention except for an entrance and exit aperture whose area ratio exceeds 3. However, Pelouch('405) teaches a tapered waveguide ([0079]) with an aperture ratio greater than 1, and the specific amount would have been an obvious design choice in view of absence of any showing of criticality or unexpected result.

In re claim 13, Pinder('803) teaches an optical in-vivo monitoring system with photodetector components (figure 2, items 25, 26, 29 and 30) arranged on axis with LED (item 33), placed in between tissue of interest and the LED face lying between the tissue test site and the photodetector components.

In re claims 15 and 16, Pinder('803) teaches an optical in-vivo monitoring system comprising: an opaque region (col 3, lns 35-37) to minimize stray light from entering transducer element; a lens; and computer circuitry (col 1, lns 15-19; col 3, lns 44-45) for processing the electrical signals from the detector for display of heart rate information; and indicator in the watch face (col 4, lns 32-35). The examiner notes that the basic structure of an LED is known in the art and, further, that the casing surrounding a diode element contains a lens cap which satisfies a "lens being coupled with a semiconductor light source..." and focused to "form an illumination beam".

Hence, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the heart rate monitor taught by Pinder('803) with the waveguide amplifier taught by Pelouch('405) in order to combine or consolidate input light in order

to increase the density of the light output from the waveguide, seen at the photodetector (Pelouch('405) - col 25, ln 66).

Claims 17-18, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pinder('803) in view of US 6,992,276 B2 (Blauvelt('276)).

In re claim 17, Pinder('803) teaches illuminating a tissue test site with an emitting semiconductor (col 2, lns 52-62), receiving light which has interacted with tissue (col 2, lns 61-63), and converting a received, modulated optical beam to an electrical signal at the detector (col 2, lns 63-65). It is noted that Pinder('803) does not teach turning light radially inward towards a symmetry axis or concentrating beam via TIR reflections in a light pipe array. However, Blauvelt('276) teaches a semiconductor photodetector for use in the fields of optical telecommunications or other optical signal monitoring applications, which is capable of beam concentration radially inwards using total internal reflection and reflective surfaces (col 8, lns 30-53; col 12, lns 23-55).

In re claim 18, Pinder('803) teaches a method for preventing stray light from reaching the detector by using a flexible seal that is concentric with the illumination source (col 1, ln 62 – col 2, ln 4) in order to ensure the majority of light received is that which is reflected from skin tissue.

In re claim 20, Pinder('803) teaches circuitry (col 1, lns 15-19; col 3, lns 44-45) for processing the electrical signals from the detector for display of heart rate information.

Hence, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the heart rate monitor taught by Pinder('803) with the

photodetector using internal reflection and reflective surfaces taught by Blauvelt('276) in order to increase signal efficiency at the detector surface by consolidating the input optical signal.

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pinder('803) in view of Blauvelt('276) as applied to claim 17 above and further in view of Pelouch('405).

In re claim 19, Pinder('803) and Blauvelt('276) teach the claimed invention except for a sufficiently smaller exit aperture coupled to a photodetector. However, Pelouch('405) teaches a tapered waveguide ([0079]) with an aperture ratio greater than 1.

Hence, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the heart rate monitor taught by Pinder('803) and the photodetector using internal reflection and reflective surfaces taught by Blauvelt('276) with the tapered waveguide amplifier taught by Pelouch('405) in order to combine or consolidate input light in order to increase the density of the light output from the waveguide, seen at the photodetector (Pelouch('405) - col 25, ln 66).

Allowable Subject Matter

Claims 1-10 and 14 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL HUNTLEY whose telephone number is (571)270-1217. The examiner can normally be reached on Monday through Friday, 7:30-4, alternating Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on 571-272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ruth S. Smith/
Primary Examiner, Art Unit 3737

/DANIEL HUNTLEY/
Examiner, Art Unit 3737